

## iMR-500

Traction solution: integrated drive and brake



Order number:

2L085S021NXBCC-G22U

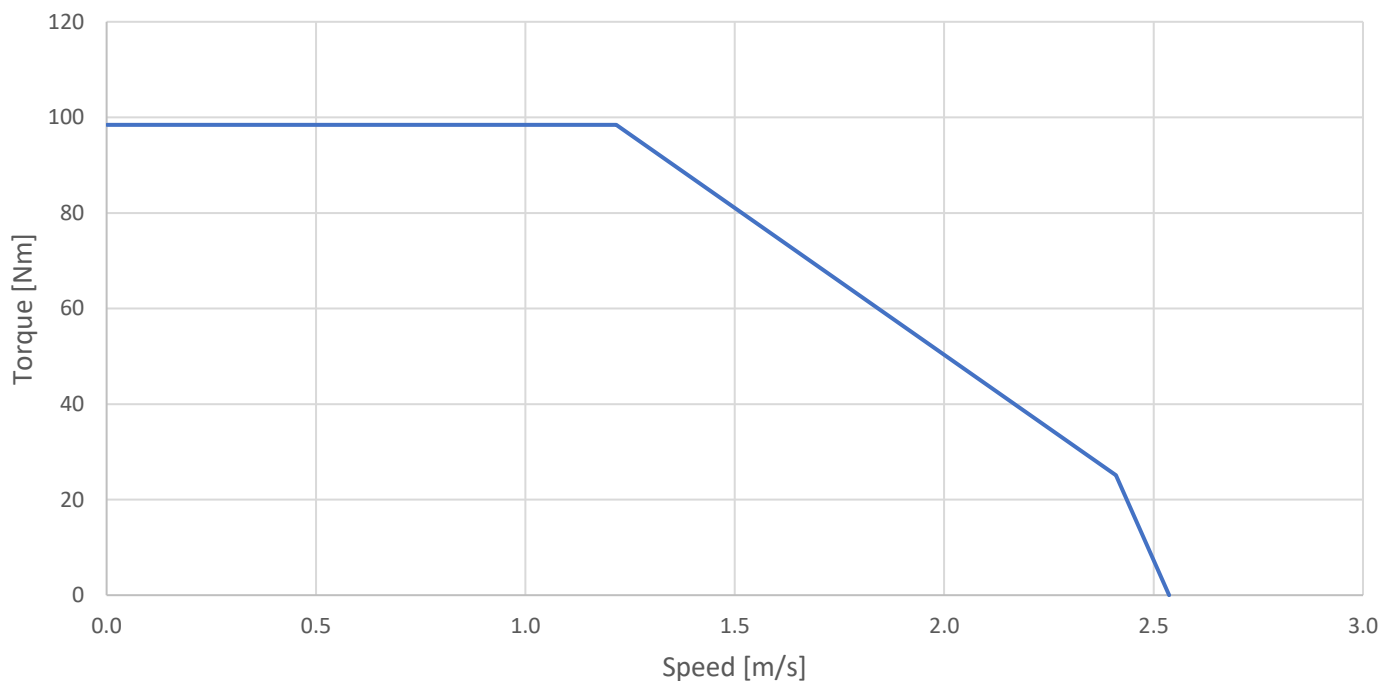
| Characteristic            | Unit            | Value             |
|---------------------------|-----------------|-------------------|
| Wheel Diameter            | mm              | 202               |
| Gearbox Type              |                 | Planetary Helical |
| Gearbox Ratio             |                 | 9:1               |
| Rated Voltage             | V <sub>DC</sub> | 48                |
| Max Torque                | Nm              | 98.4              |
| Max Speed                 | rpm             | 240               |
|                           | m/s             | 2.54              |
|                           | km/h            | 9.10              |
| Peak Power                | W               | 1,770             |
| Max Radial Load per Wheel | kg              | 5000              |
| Unit Weight               | kg              | 12                |

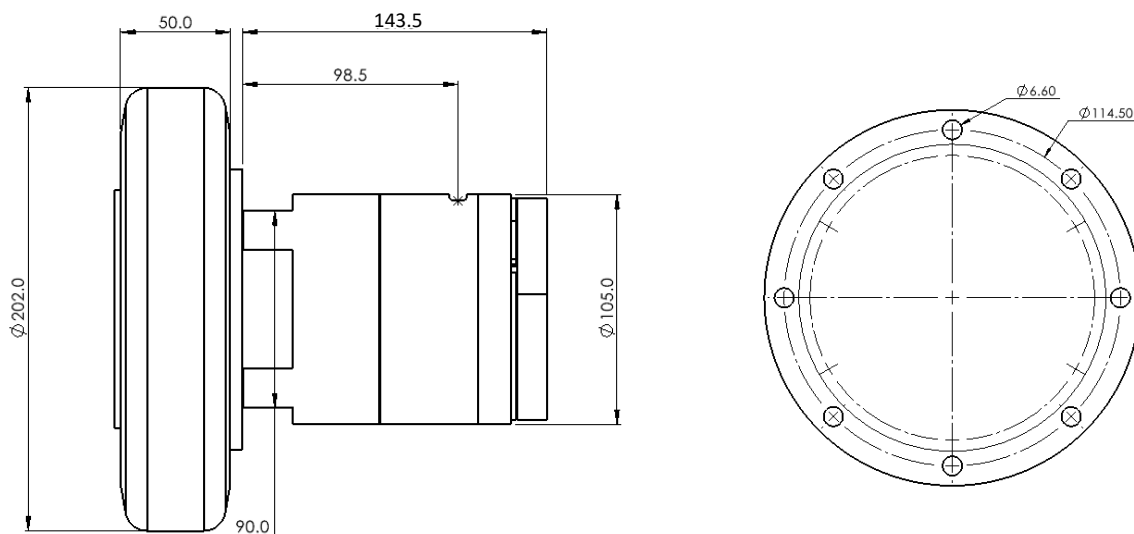
| Specification      | Detail                 |
|--------------------|------------------------|
| Wheel Material     | PU-Rad: 78°±3° Shore A |
| Brake              | Spring Applied 4 Nm    |
| Feedback           | 20 bits                |
| Thermal Protection | KTY-84                 |
| Comm. Interface    | EtherCAT               |
| Safety Functions   | STO, SBC, SS1          |

### Solution Peak performance diagram

*Output at the wheel*

#### Wheel Output - Speed-Torque Diagram



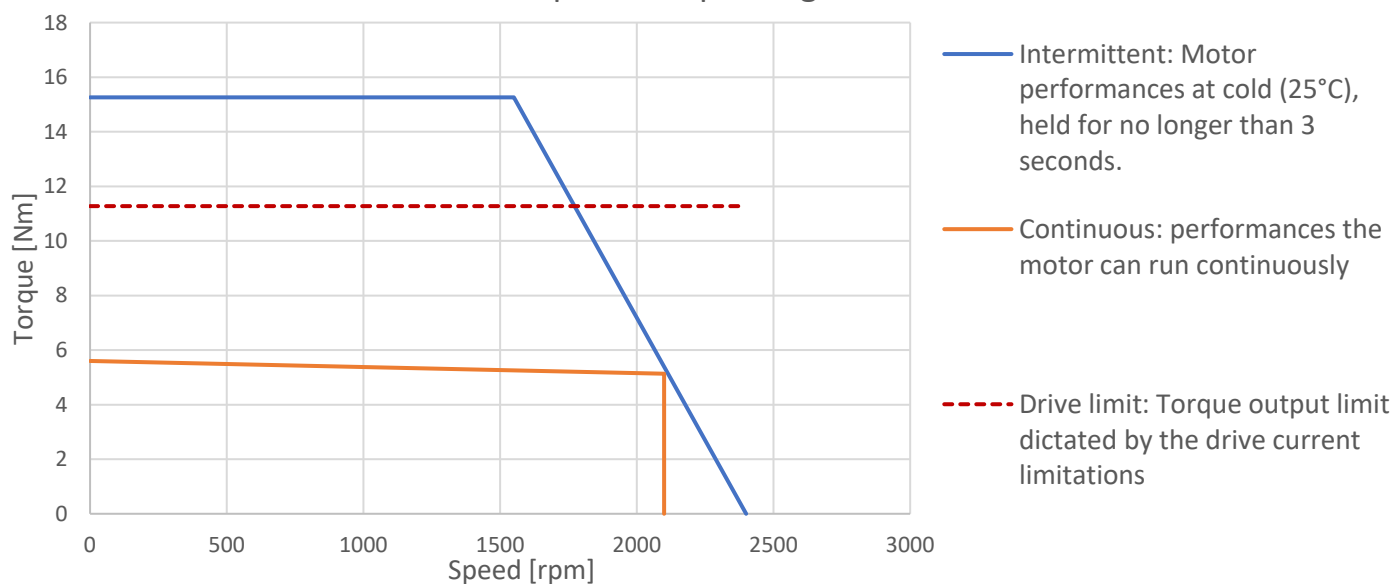


## MOTOR SPECIFICATIONS

| Characteristic   | Abbr.     | Unit      | Value |
|------------------|-----------|-----------|-------|
| Motor technology |           |           | SPM   |
| No of poles      |           |           | 10    |
| Rated Voltage    | $U_{mot}$ | $V_{rms}$ | 48    |
| S1 Rated speed   | $n_n$     | rpm       | 2100  |
| Maximum speed    | $n_{max}$ | rpm       | 2400  |
| Rated power      | $P_n$     | W         | 1130  |
| Stall torque     | $M_0$     | Nm        | 5.6   |
| S1 Rated torque  | $M_n$     | Nm        | 5.2   |
| Peak torque      | $M_{max}$ | Nm        | 15.26 |
| Stall current    | $I_0$     | $A_{rms}$ | 31.9  |
| S1 Rated current | $I_n$     | $A_{rms}$ | 27.3  |
| Peak current     | $I_{max}$ | $A_{rms}$ | 87    |

| Characteristic                    | Abbr.          | Unit         | Value     |
|-----------------------------------|----------------|--------------|-----------|
| Torque constant (hot)             | $k_{t_{hot}}$  | $Nm/A_{rms}$ | 0.19      |
| Torque constant (cold)            | $k_{t_{cold}}$ | $Nm/A_{rms}$ | 0.21      |
| Voltage constant                  | $k_e$          | $V/krpm$     | 13.6      |
| Winding resistance                | $R_{p-p}$      | $\Omega$     | 0.07      |
| Winding inductance                | $L_{p-p}$      | mH           | 0.22      |
| Max ambient operating temperature |                |              | 40°C      |
| Insulation class                  |                |              | F – 155°C |

Motor Speed-Torque diagram - 48VDC





## GEARBOX SPECIFICATIONS

| Characteristic        | Unit | Value |
|-----------------------|------|-------|
| Gear box ratio        |      | 9 : 1 |
| Radial load           | N    | 5,000 |
| Axial Load            | N    | 2,000 |
| Nominal output torque | Nm   | 50    |
| Nominal output speed  | rpm  | 350   |
| Maximum output torque | Nm   | 150   |
| Backlash              |      | 0.3°  |
| Efficiency            |      | 95%   |

## BRAKE SPECIFICATIONS

| Characteristic        | Unit            | Value   |
|-----------------------|-----------------|---------|
| Operational voltage   | V <sub>DC</sub> | 24      |
| Max release voltage   | V <sub>DC</sub> | 16      |
| Max re-engage voltage | V <sub>DC</sub> | 8       |
| Power                 | W               | 15      |
| Torque                | Nm              | 4       |
| Response time         | ms              | 250     |
| Release time          | ms              | 110     |
| Insulation            |                 | Class F |
| Max backlash          |                 | 3°      |

## INTEGRATED DRIVE

Model: Circulo 9

Drive technical specifications: [https://doc.synapticon.com/circulo/technical\\_specs/tech\\_specs\\_circulo.html](https://doc.synapticon.com/circulo/technical_specs/tech_specs_circulo.html)

## FEEDBACK SPECIFICATIONS

|               | Feedback   |
|---------------|--|
| Type          | Off-Axis magnetic field scanning<br>Absolute encoder |
| Resolution    | 20 bit   |
| Accuracy      | ±0.02°   |
| Repeatability | ±0.0036°   |

## CONNECTOR GUIDE

Power:

|                  | Cables                                 |
|------------------|--|
| Supply 24-58 VDC | Red, 10AWG, 110 cm<br>Cut tinned end   |
| GND              | Black, 10AWG, 110 cm<br>Cut tinned end |

Communication

Motor @ Node 0

| STO-Input  | Cable         |
|------------|---------------|
| SBC1       | Red, 180 cm   |
| SBC2       | Black, 180 cm |
| Safety GND | White, 180 cm |

| EtherCAT        | Cables                            |
|-----------------|-----------------------------------|
| EtherCAT input  | Black, terminated in RJ45, 80 cm  |
| EtherCAT Output | Grey, terminated in JST GH, 80 cm |

Motor @ Node 1

| EtherCAT       | Cables                            |
|----------------|-----------------------------------|
| EtherCAT input | Grey, terminated in JST GH, 80 cm |

NOTE: 1) The data provided in this datasheet is for guidance only and does not form part of any contract. 2) Motor, drive, gearbox and brake should undergo application testing to validate performance.

iNMotion is part of iNetic [www.inetic.com](http://www.inetic.com)

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